

Entry Procedures and Timelines

DR. MULQUEEN: Thank you.

After all of this morning's briefings, I am sure all of you are terribly excited to get started and you are really looking forward to entering this contest. So I would like to tell you what you need to do to actually go about participating in this event.

Let me just put up the timeline. You should be somewhat familiar with this by now. On April 1st, we are going to post the rules to the website, and at that point, we will also open the application period, which means you will be able to find the application forms and directions on how to submit them on the website at that point.

The application period closes on 13 October, and the reason there is such a long time in between when the application period opens and when it closes is we expect this to be a dialogue between DARPA and yourself. So you can submit an application early on. We encourage you to submit the application as early as possible.

If we can't accept your application for whatever reason, we will tell you why that is. The reason we are having such a long period is we anticipate that some of

1 these rules are intentionally left fairly open, so you can
2 kind of do whatever you want within certain boundaries, and
3 I suspect knowing some of you, you will try to push those
4 boundaries as far as you can. So we will help you find
5 where those boundaries are.

6 You might submit an idea, and we are going to tell
7 you no, that is not acceptable for these reasons, and you
8 can resubmit that idea. You have up until 13 October to
9 keep resubmitting it. So you are encouraged to start as
10 early as possible.

11 Getting closer to the event, there is going to be
12 this kickoff ceremonial start at the DARPA Tech meeting.
13 There is not going to be really any autonomous test for your
14 vehicle at that point. The real contest starts on 12 March,
15 which is the day before the main event, and that is going to
16 be a qualification inspection and demonstration. I will go
17 over that in more detail in a minute. Finally, the event
18 itself on 13 March.

19 So the application process is going to have three
20 parts. There is going to be an administrative application,
21 there is going to be a technical paper, and then there is
22 going to be an application addendum, which is going to

1 include last-minute items. I will go over all of those
2 right now.

3 The administration application is going to be very
4 straightforward. It is going to have things like your name,
5 if you are sponsored, who your sponsor is. You are going to
6 be required to show that you have insurance, and you are
7 going to be required to sign some agreements. Again, all of
8 this is in more detail in your packet that you received this
9 morning, and it will also be on the website in much more
10 detail. I suspect this will be fairly straightforward.

11 The part where you may have a few questions is on
12 the technical paper. The reasons for having the technical
13 paper, there are three primary reasons. One is to ensure
14 that you comply with all of the Grand Challenge rules. As I
15 have said, the rules are intentionally left fairly open, and
16 we are going to allow you to be as creative as you want, but
17 there are certain -- I will give you an example.

18 We are not telling you what kind of power source
19 you can use or what kind of fuel you can use, but if you
20 propose to use 50 tons of TNT as your power source, we are
21 going to write back and say, "Well, that violates Rule No.
22 1, which is the thing has to be safe." So you can write

1 back and say, "Okay. I am going to use diesel instead." SO
2 now you have time. You can get all that worked out. We
3 don't want you showing up to the main event itself with a
4 truckload of TNT and then having to turn you away. This
5 should help you, and we encourage you to use this process.

6 We are also going to look at the feasibility of
7 the proposed design. For efficient operation of the event,
8 we need to make sure we don't have a lot of entries that are
9 just completely incapable of doing anything, and they are
10 just going to clutter up the course. So we are going to
11 actually look at your paper. We are going to question
12 whether or not we think this has any realistic shot. We are
13 going to be fairly generous. This isn't a typical DARPA
14 proposal where you have to really prove that you have the
15 correct solution. This is just to make sure you are at
16 least not way out in left field and you are just going to
17 muck up the whole event.

18 Finally, the overriding concern through all of
19 this is safety. So we are going to use the technical paper
20 as a measurement of the safety of the vehicle.

21 As I have already mentioned, you can start
22 submitting the technical paper when the application period

1 opens, and you can keep resubmitting papers that have been
2 turned away for whatever reason up until 13 October.

3 The other thing to point out about this technical
4 paper is that the purpose of the Grand Challenge is to
5 stimulate technical development in this area. So one of the
6 ways we are going to do that is we are going to publish the
7 papers after the end of the Grand Challenge. After the
8 event, it is not such a secret to keep your idea secret, and
9 we are hoping that if you have really found the right
10 combination, this would be kind of like an academic
11 publication where you would want to share that with the rest
12 of the world. So you want to keep that in mind as you are
13 writing the papers as well.

14 I will go over very briefly what the content of
15 the paper is. You have this in your packet as well, and it
16 will be on the website in more detail. I just want to give
17 you an idea of what we are looking for.

18 First of all, there is a 10-page limit to the
19 paper, and we would expect most of you would come pretty
20 close to that limit. If you have a fairly straightforward
21 design, you may be able to do it in less than 10 pages.
22 That would be fine, as long as the design really is

1 straightforward. If you submit one paragraph as your
2 technical paper, it is probably not going to be accepted and
3 you will, of course, have to resubmit it. So that is the
4 kind of detail we are looking for.

5 We are going to ask you to describe your system in
6 that level of detail, and we are going to ask you to
7 describe all of the various aspects of your system, the
8 mobility, what your power source is, how you are going to do
9 the processing, both software and hardware, what kind of
10 sensors you are going to use, and what kind of communication
11 devices you are going to have. For that, I am particularly
12 talking about the E-stop. We are going to actually make
13 sure that two people aren't on the same channel for their
14 E-stop. We will do the deconfliction this way.

15 We are also going to ask you about any performance
16 tests that you either have done or are planning to do, and
17 this will give us an idea of what the feasibility of your
18 study is.

19 Again, safety is an overriding concern, and
20 environmental is an overriding concern. We have left the
21 rules very broad on what you can do, but we want to make
22 sure that you are not going to do something incredibly

1 dangerous. So we are going to ask you things like what the
2 top speed is. There is no limit on what your top speed is,
3 but if you have a very fast vehicle, we might look at
4 certain issues a little differently than if you had a very
5 slow vehicle. We will ask you what the size and weight are.

6 If you have a very heavy vehicle, that might change what
7 you can do.

8 Also, we have a category we are calling
9 electromagnetic radiators. So we are including anything
10 about laser, radar, anything like that. We are going to
11 want to know things like power output and what frequency you
12 are operating at. Again, that is mostly for safety.

13 We are also going to ask you about any safety
14 equipment, things like fire extinguishers, what you are
15 planning on having onboard, making sure you comply with all
16 the rules.

17 We will then ask you how the E-stop is going to
18 work, and we want a detailed description to make sure that
19 when the operator in the safety vehicle hits that E-stop, we
20 really need to be sure it is going to stop. So we are going
21 to ask you how you plan on doing that.

22 Finally, you also need to describe your safety

1 vehicle. Again, we are looking to see that you have
2 complied with all the rules. As Mike Fagan mentioned, the
3 safety vehicle must comply to the SCORE International safety
4 standards. So we are going to ask you what kind of seat
5 belts and first aid kit and fire extinguishers, all of those
6 things that are required by SCORE. We are going to make
7 sure that you are aware of that at this point.

8 The last piece is going to be an application
9 addendum. So this is basically for last-minute items. We
10 are going to take all the teams that have submitted
11 applications, and at some point leading up to the event, we
12 may write back to you and ask for additional material. The
13 primary purpose of this is to give you a chance to make
14 updates that you might need to do at the last minute.

15 For example, if you add a team member after 13
16 October, you could just send us the application addendum
17 saying we have this new team roster. We might also put out
18 a program at the event, so we might like a photograph of
19 your vehicle, or if you had your entire team standing around
20 the vehicle and you wanted a picture to go in that.
21 Obviously you are not going to be ready for that until right
22 before the event. So we are going to ask for it at the last

1 minute. Again, this should be fairly straightforward.

2 Finally, once you have submitted all of the
3 application material, once your technical paper has been
4 judged and accepted, the last thing you need to do in order
5 to compete in the main event is going to be this
6 qualification and inspection period. This is going to be
7 the day before the main event at the California Motor
8 Speedway.

9 The first thing that we are going to do is inspect
10 the vehicles, and what we are looking for here is that you
11 comply with all of the Grand Challenge rules and that you
12 have complied with the technical paper. I want to emphasize
13 that you must do what you said you are going to do in the
14 technical paper. We are going to be looking at all of the
15 equipment that you said you are going to have, and we are
16 going to make sure you actually have it, but we are also
17 going to look for any equipment on the vehicle that isn't in
18 the technical paper. Of course, that won't be allowed, and,
19 of course, we are specifically looking for people who might
20 be trying to cheat and get around it by doing something that
21 they never told us about.

22 Once you pass the inspection, you will then have

1 to do a small qualification event. This will be something
2 that will be fairly easy for your vehicles to do. Any
3 vehicle that would be capable of doing the full course will
4 have no problem doing this, this short qualification. It is
5 going to be a short course defined by way points and
6 boundaries, just like the main event is going to be.

7 We may have some small obstacles there, but
8 nothing terribly challenging, and we are just going to make
9 sure that your vehicle actually can move and operate at a
10 reasonably intelligent manner. This is, again, just for the
11 efficient operation of our event. We don't want you showing
12 up to the main event with something that can't move and
13 completely mucking up the course.

14 There will also be a mandatory demonstration of
15 the E-stop. So we are going to have vehicles come up to
16 speed, have the operator engage the E-stop, and everything
17 must stop.

18 So once you pass the qualification and the
19 inspection criteria, you are ready to head to the main
20 event, and then hopefully we will see you in Las Vegas 6 or
21 10 hours later.

22 Thanks.